

## ***Mark Luitzen Brongersma***

Stanford University, Geballe Laboratory for Advanced Materials,  
Department of Materials Science and Engineering,  
McCullough Building, Room 349, 476 Lomita Mall, Stanford, CA 94305-4045  
Tel. (650) 736-2152 / Fax. (650) 736-1984  
Email: Brongersma@stanford.edu, <http://mse.stanford.edu/faculty/brongersma.html>

### ***Professional Preparation***

---

- 2000–2001 **California Institute of Technology**, Pasadena, California.  
Senior Postdoctoral Research Fellow: Micro-photonics.  
1998-2000 **California Institute of Technology**, Pasadena, California.  
Postdoctoral Research Fellow: Micro-electronics, nano-photonics.  
1993-1998 **FOM-Institute**, Amsterdam, The Netherlands.  
Ph.D. Materials Science, September 1998.  
M.S. Physics, Eindhoven University of Technology, August 1994.

### ***Appointments***

---

- 2013 – Pres **Stanford University**: Professor of Materials Science  
2008 - 2013 **Stanford University**: Associate Professor of Materials Science  
2001 - 2008 **Stanford University**: Assistant Professor of Materials Science  
2000 - 2001 **California Institute of Technology**: Senior Postdoctoral Research Fellow  
1998 - 2000 **California Institute of Technology**: Postdoctoral Research Fellow  
1994 - 1998 **FOM-Institute**, Graduate Research Associate  
1993 - 1994 **Eindhoven University of Technology**, Research Associate  
1992 - 1993 **AT&T Bell Laboratories**, Research Associate

### ***Awards and Honors***

---

- Global Climate and Energy Project, Distinguished Lecture, 2013
- Lange Lecturer Recipient, University of Santa Barbara, 2012
- Fellow of the SPIE, 2011
- Fellow of the American Physical Society, 2010
- Raymond and Beverly Sackler Prize in the Physical Sciences for Physics, 2010
- Fellow of the Optical Society of America, 2008
- Keck Faculty Scholar, Stanford University, 2008-2012
- Walter J. Gores Award for Excellence in Teaching, Stanford 2007
- National Science Foundation Career Award 2004
- Finmeccanica Faculty Scholar, Stanford University, 2001-2004
- Ricky-Nielsen Faculty Scholar, Stanford University 2001-2004
- Charles Lee Powell Scholar, Stanford University 2003-2004
- Böhmische Physical Society Member, 1999

### ***Membership of Professional Societies***

---

- Optical Society of America (OSA), Fellow
- American Physical Society (APS), Fellow
- International Society for Optical Engineering (SPIE), Fellow
- Materials Research Society (MRS)

## *Selected Publications*

---

- 134) “Electrically driven subwavelength optical nanocircuits,” Kevin C. Y. Huang, Min-Kyo Seo, Tomas Sarmiento, Yijie Huo, James S. Harris, and Mark L. Brongersma, *Nature Photonics* 8, 244–249 (2014).
- 133) “Study of Carrier Statistics in Uniaxially Strained Ge for a Low-Threshold Ge Laser,” Donguk Nam, D.S. Sukhdeo, S. Gupta, Ju-Hyung Kang, Mark L. Brongersma, K.C. Saraswat, *IEEE Journal of Selected Topics in Quantum Electronics*, 20, 1500107 (2014).
- 132) “Two-Dimensional Chalcogenide Nanoplates as Tunable Metamaterials via Chemical Intercalation,” Judy Cha, Kristie Koski, Kevin C.Y. Huang, Ken X. Wan, Weidong Luo, D.S. Kong, Zongfu Yu, Shanhui H. Fan, Mark L. Brongersma, Yi Cui, *Nano Letters* 13, 5913-5918 (2013).
- 131) “Compact Aperiodic Metallic Groove Arrays for Unidirectional Launching of Surface Plasmons, Xinpeng Huang, Mark L. Brongersma, *Nano Lett* 13, 5420-5424, (2013).
- 130) “Electro-optical modulation of a silicon waveguide with an “epsilon-near-zero” material,” Alok P. Vasudev, Ju-Hyung Kang, Junghyun Park, Xiaoge Liu, and Mark L. Brongersma *Optics Express* 21, 26387- 26397 (2013).
- 129) “Broadband Sharp 90-degree Bends and T-Splitters in Plasmonic Coaxial Waveguides,” Wonseok Shin, Wenshan Cai, Peter B. Catrysse, *Nano letters* 13, 4753-4758 (2013).
- 128) “Strain-Induced Pseudoheterostructure Nanowires Confining Carriers at Room Temperature with Nanoscale-Tunable Band Profiles,” Donguk Nam, David S. Sukhdeo, Ju-Hyung Kang, Jan Petykiewicz, Jae Hyung Lee, Woo Shik Jung, Jelena Vučković, Mark L. Brongersma, and Krishna C. Saraswat, “*Nano Lett.*, 13, 3118–3123 (2013).
- 127) “Self-Assembly Based Plasmonic Arrays Tuned by Atomic Layer Deposition for Extreme Visible Light Absorption,” Carl Hägglund, Gabriel Zeltzer, Ricardo Ruiz, Isabell Thomann, Han-Bo-Ram Lee, Mark L. Brongersma, and Stacey F. Bent, *Nano Lett.*, 13, 3352-3357 (2013).
- 126) “Optimization of non-periodic plasmonic light-trapping layers for thin-film solar cells,” Ragip A. Pala, John S. Q. Liu, Edward S. Barnard, Daulet Askarov, Erik C. Garnett, Shanhui Fan and Mark L. Brongersma, *Nature Communications* 4, 2095, doi:10.1038/ncomms3095 (2013).
- 125) “Geometric light trapping with a V-trap for efficient organic solar cells,” Soo Jin Kim, George Y. Margulis, Seung-Bum Rim, Mark L. Brongersma, Michael D. McGehee, Peter Peumans, *Optics Express*, 21, A305-A312 (2013).
- 124) “Strain-Induced Pseudoheterostructure Nanowires Confining Carriers at Room Temperature with Nanoscale-Tunable Band Profiles,” Donguk Nam, David S. Sukhdeo, Ju-Hyung Kang, Jan Petykiewicz, Jae Hyung Lee, Woo Shik Jung, Jelena Vučković, Mark L. Brongersma, and Krishna C. Saraswat, *Nano Lett.*, Articles ASAP (2013).
- 124) “Light emission from strained germanium,” Jinendra Raja Jain, Aaron Hryciw, Thomas M. Baer, David A.B. Miller, Mark L. Brongersma, Roger T. Howe, *Nature Photonics* 7, 162-163 (2013).

- 123) “Effects of surface oxide formation on germanium nanowire band-edge photoluminescence,” Fatemeh Sadat Minaye Hashemi, Shruti Thombare, Anna Fontcuberta i Morral, Mark L. Brongersma, and Paul C. McIntyre, *Appl. Phys. Lett.* 102, 251122 (2013).
- 122) “Plasmonics: Harvest season for hot electrons,” Hamidreza Chalabi and Mark L. Brongersma, *Nature Nanotechnology* 8, 229–230 (2013).
- 121) “Redesigning Photodetector Electrodes as an Optical Antenna,” Pengyu Fan, Kevin C. Y. Huang, Linyou Cao, and Mark L. Brongersma, *Nano Lett.*, 13, 392–396 (2013).
- 120) “The planar parabolic optical antenna,” David Schoen, Toon Coenen, F Javier Garcia de Abajo, Mark L. Brongersma, Albert Polman, *Nano letters* 13, 188-93 (2013).
- 119) “An Electrically-Driven GaAs Nanowire Surface Plasmon Source,” Pengyu Fan, Carlo Colombo, Kevin C. Y. Huang, Peter Krogstrup, Jesper Nygård, Anna Fontcuberta i Morral, and Mark L. Brongersma, *Nano Lett.*, 12, 4943–4947 (2012).
- 118) “Antenna electrodes for controlling electroluminescence,” Kevin C.Y. Huang, Min-Kyo Seo, Yijie Huo, Tomas Sarmiento, James S. Harris, and Mark L. Brongersma, *Nature Communications* 3, 1005, (2012).
- 117) “Measurement of the polarization state of light using an integrated plasmonic polarimeter,” Farzaneh Afshinmanesh, Justin S. White, Wenshan Cai, Mark L. Brongersma,” *Nanophotonics* 1, 125–129 (2012).
- 116) “Routing and photodetection in subwavelength plasmonic slot waveguides,” Dany-Sebastien Ly-Gagnon 1, Krishna C. , Justin S. White, Pierre Wahl, Mark L. Brongersma and David A.B. Miller, *Nanophotonics* 1, 9–16 (2012).
- 115) “Direct-gap photoluminescence from germanium nanowires,” Yoko Kawamura, Kevin C. Y. Huang, Shruti V. Thombare, Shu Hu, Marika Gunji, Toyofumi Ishikawa, Mark L. Brongersma, Kohei M. Itoh, and Paul C. McIntyre, *Phys. Rev.B* B 86, 035306 (2012)
- 114) “An Invisible Metal-Semiconductor Photodetector,” Pengyu Fan, Uday Chettiar, Linyou Cao, Farzaneh Afshinmanesh, Nader Engheta, and Mark L. Brongersma, *Nature Photonics* 6, 380–385 (2012).
- 113) “A micromachining-based technology for enhancing germanium light emission via tensile strain,” Jinendra Raja Jain, Aaron Hryciw, Thomas M. Baer, David A. B. Miller, Mark L. Brongersma, and Roger T. Howe, *Nature Photonics* 6, 398–40 (2012).
- 112) “Hybrid Silicon Nanocone-Polymer Solar Cells,” Sangmoo Jeong, Erik C. Garnett, Shuang Wang, Zongfu Yu, Shanhui Fan, Mark L. Brongersma, Michael D. McGehee, and Yi Cui, *Nano Letters*, 12, 2971–2976 (2012).
- 111) “Electroluminescence from strained germanium membranes and implications for an efficient Si-compatible laser,” Nam Donguk, Sukhdeo Devanand, Szu-Lin Cheng, Roy Arunanshu, Kevin C.Y. Huang, Mark L. Brongersma, Yoshio Nishi, Krishna Saraswat, *Appl. Phys. Lett.* 100, 131112-131116 (2012).
- 110) “Thermal Stability and Surface Passivation of Ge Nanowires Coated by Epitaxial SiGe Shells”, Shu Hu, Yoko Kawamura, Kevin C.Y. Huang, Yanying Li, Ann Marshall, Kohei Itoh, Mark L. Brongersma, Paul C. McIntyre, *Nano Letters* 12, 1385-91, (2012).

- 109) “Nanophotonic light trapping with patterned transparent conductive oxides,” Alok P. Vasudev, Jon A. Schuller, and Mark L. Brongersma *Optics Express* Vol. 20, A385–A394 (2012).
- 108) “Self-limited plasmonic welding of silver nanowire junctions,” Erik C. Garnett, Wenshan Cai, Judy J. Cha, Fakhruddin Mahmood, Stephen T. Connor, M. Greyson Christoforo, Yi Cui, Michael D. McGehee, and Mark L. Brongersma, *Nature Materials* 11, 241–249 (2012).
- 107) “Metal-dielectric-metal surface plasmon-polariton resonators,” Anu Chandran, Edward S. Barnard, Justin S. White, and Mark L. Brongersma, *Phys. Rev. B* 85, 085416 (2012).
- 106) “Ultrathin crystalline-silicon solar cells with embedded photonic crystals,” Shrestha Basu Mallick, Mukul Agrawal, Artit Wangperawong, Edward S. Barnard, Kaushal K. Singh, Robert J. Visser, Mark L. Brongersma, and Peter Peumans, *Appl. Phys. Lett.* 100, 053113 (2012).
- 105) “Electrical control of plasmonic Nanodevices,” Wenshan Cai, Young Chul Jun, and Mark L. Brongersma, *SPIE Newsroom*. doi: 10.1117/2.1201112.004060 (2012).
- 104) “Rapid computation of light scattering from aperiodic plasmonic structures,” Xinpeng Huang and Mark L. Brongersma, *Phys. Rev. B* 84, 245120 (2011).
- 103) “Engineering light absorption in single-nanowire solar cells with metal nanoparticles,” Carlo Colombo, Peter Krogstrup, Jesper Nygård, Mark L. Brongersma and Anna Fontcuberta i Morral, *New J. Phys.*, 13, 123026 (2011).
- 102) “Strained germanium thin film membrane on silicon substrate for optoelectronics,” Donguk Nam, Devanand Sukhdeo, Arunanshu Roy, Krishna Balram, Szu-Lin Cheng, Kevin Chih-Yao Huang, Ze Yuan, Mark L. Brongersma, Yoshio Nishi, David Miller, and Krishna Saraswat, *Optics Express* 19, 25872 (2011).
- 101) “Submicron plasmonic dichroic splitter,” John S.Q. Liu, Ragip A. Pala, Farzaneh Afshinmanesh, Wenshan Cai, Mark L. Brongersma, *Nature Communications* 2,525 (2011).
- 100) “Electrically Controlled Nonlinear Generation of Light with Plasmonics,” Wenshan Cai, Alok P. Vasudev, Mark L. Brongersma, *Science* 333, 1720-1723 (2011).
- 99) “Imaging the Hidden Modes of Ultrathin Plasmonic Strip Antennas by Cathodoluminescence,” Edward S. Barnard, Toon Coenen, Ernst Jan R. Vesseur, Albert Polman, and Mark L. Brongersma, *Nano Lett.*, 11, 4265–4269 (2011).
- 98) “Tensile-strained germanium-on-insulator substrate fabrication for silicon-compatible optoelectronics,” J. Raja Jain, Dany-Sebastien Ly-Gagnon, Krishna C. Balram, Justin S. White, Mark L. Brongersma, David A. B. Miller, and Roger T. Howe, *Optical Materials Express*, 1, 1121-1126,2011.
- 97) “Power flow from a dipole emitter near an optical antenna,” Kevin C. Y. Huang, Young Chul Jun, Min-Kyo Seo, and Mark L. Brongersma, *Optics Express*, 19, 19084-19092 (2011).
- 96) “Photocurrent mapping of near-field optical antenna resonances,” Edward S. Barnard, Ragip A. Pala, and Mark L. Brongersma, *Nature Nanotechnology*, 6, 588-593 (2011).
- 95) “Sombrero-Shaped Plasmonic Nanoparticles with Molecular-Level Sensitivity and Multifunctionality,” Jung-Sub Wi, Edward S. Barnard, Robert J. Wilson, Minliang

- Zhang, Mary Tang, Mark L. Brongersma, Shan X. Wang, *ACS Nano* 5, 6449-6457 (2011).
- 94) "Plasmon Enhanced Solar-to-Fuel Energy Conversion," Isabell Thomann, Blaise A. Pinaud, Zhebo Chen, Bruce M. Clemens, Thomas F. Jaramillo, and Mark L. Brongersma, *Nano Lett.*, 11, 3440–3446 (2011).
  - 93) "Multiple-Wavelength Focusing of Surface Plasmons with a Nonperiodic Nanoslit Coupler," Takuo Tanemura, Krishna C. Balram, Dany-Sebastien Ly-Gagnon, Pierre Wahl, Justin S. White, Mark L. Brongersma, and David A. B. Miller, *Nano Lett.* 11, 2693–2698 (2011).
  - 92) "Nanowire Solar Cells," Erik C. Garnett, Mark L. Brongersma, Yi Cui, and Michael D. McGehee, *Annual Review of Materials Research* 41 269–95 (2011).
  - 91) "Plasmonic beaming and active control over fluorescent emission," Young Chul Jun, Kevin C.Y. Huang, and Mark L. Brongersma, *Nature Communications*, 2, 283 (2011).
  - 90) "Optical Coupling of Deep-Subwavelength Semiconductor Nanowires," Linyou Cao, Pengyu Fan, and Mark L. Brongersma, *Nano Letters* 11, 1463-1468, (2011).
  - 89) "Atomic Layer Deposition of Lead Sulfide Quantum Dots on Nanowire Surfaces," Neil P. Dasgupta, Hee Joon Jung, Orlando Trejo, Matthew T. McDowell, Aaron Hryciw, Mark Brongersma, Robert Sinclair, and Fritz B. Prinz, *Nano Lett.*, 11 934 - 940 (2011).
  - 88) "Thermo-optic tuning of erbium-doped amorphous silicon nitride microdisk resonators," Aaron C. Hryciw, Rohan D. Kekatpure, Selçuk Yerci, Luca Dal Negro, and Mark L. Brongersma, *Appl. Phys. Lett.* 98, 041102 (2011).
  - 87) "Plasmonic Dye-Sensitized Solar Cells," I-Kang Ding, Jia Zhu, Wenshan Cai, Soo-Jin Moon, Ning Cai, Peng Wang, Shaik M Zakeeruddin, Michael Grätzel, Mark L. Brongersma, Yi Cui, and Michael D. McGehee, *Advanced Energy Materials*, 1, 52–57 (2011).
  - 86) "Elements for Plasmonic Nanocircuits with Three-Dimensional Slot Waveguides," Wenshan Cai , Wonseok Shin , Shanhui Fan , and Mark L. Brongersma, *Adv. Mater.* 5120–5124, 22, 2010.
  - 85) "High Excitation Transfer Efficiency from Energy Relay Dyes in Dye-Sensitized Solar Cells," Brian E. Hardin, Jun-Ho Yum, Eric T. Hoke, Young Chul Jun, Peter Péchy, Tomás Torres, Mark L. Brongersma, Md. Khaja Nazeeruddin, Michael Grätzel, and Michael D. McGehee, *Nano Lett.* 3077-3083, 2010.
  - 84) "Tuning the Color of Silicon Nanostructures," Linyou Cao, Pengyu Fan, Edward S. Barnard, Ana M. Brown and Mark L. Brongersma, *Nano Lett.*, 2649–2654, 10, 2010.
  - 83) "Plasmonics gets transformed," Wenshan Cai and Mark L. Brongersma, *Nature Nanotechnology* 5, 485 - 486 (2010).
  - 82) "Phase-Coupled Plasmon-Induced Transparency," Rohan D. Kekatpure, Edward S. Barnard, Wenshan Cai, and Mark L. Brongersma, *Phys. Rev. Lett.* 104, 243902 (2010).
  - 81) "The Case for Plasmonics," Mark L Brongersma and Vladimir Shalaev, *Science* 328, 440-441 (2010).

- 80) “Resonant Germanium Nanoantenna Photodetectors,” Linyou Cao, Joon-Shik Park, Pengyu Fan, Bruce Clemens and Mark L. Brongersma, *Nano Lett.* 10, 1229–1233 (2010).
- 79) “Plasmonics for Extreme Light Concentration and Manipulation,” Jon A. Schuller, Edward Barnard, Wenshan Cai, Young Chul Jun, Justin White, Mark L. Brongersma, *Invited Review for Nature Materials*, 9, 193-204 (2010).
- 78) “Strong modification of quantum dot spontaneous emission via gap plasmon coupling in metal nanoslits,” Young Chul Jun, Ragip Pala, Mark L. Brongersma, *J. Phys. Chem. C*, 114, 7269–7273 (2010).
- 77) “Spatially resolved Raman spectroscopy on indium-catalyzed core–shell germanium nanowires: size effects,” Y. Xiang, I. Zardo, L.Y. Cao, T. Garma, M. Heiß, J.R. Morante, J. Arbiol, M.L. Brongersma, and A. Fontcuberta i Morral, *Nanotechnology* 21 105703 (2010).
- 76) “Semiconductor Nanowire Optical Antenna Solar Absorbers,” Linyou Cao, Pengyu Fan, Alok P. Vasudev, Justin S. White, Zongfu Yu, Wenshan Cai, Jon A. Schuller, Shanhui Fan and Mark L. Brongersma, *Nano Lett.*, 10, 439–445 (2010).
- 75) “Electrifying plasmonics on silicon,” Aaron Hryciw, Young Chul Jun, Mark L. Brongersma, *Nature Materials*, 9, 3-4 (2010).
- 74) “Mid-IR plasmonic antennas on silicon-rich oxinitride absorbing substrates: Nonlinear scaling of resonance wavelengths with antenna length,” T. Šikola, R. D. Kekatpure, E. S. Barnard, J. S. White, P. Van Dorpe, L. Břínek, O. Tomanec, J. Zlámal, D.Y. Lei, Y. Sonnefraud, S. A. Maier, J. Humlíček, and M. L. Brongersma, *Appl. Phys. Lett.*, 95, 253109 (2009).
- 73) “Solving dielectric and plasmonic waveguide dispersion relations on a pocket calculator,” Rohan D. Kekatpure, Aaron C. Hryciw, Edward S. Barnard, and Mark L. Brongersma, *Opt. Express*, 17, 24112-24129 (2009).
- 72) “General Properties of Dielectric Optical Antennas,” Jon A. Schuller and Mark L. Brongersma, *Optics Express*, 17, 24084-24095 (2009).
- 71) “Plasmonics and Metamaterials: Introduction,” A. Boardman, M.L. Brongersma, M. Stockman, and M. Wegener, *J. Opt. Soc. Am. B*26, PM1, 2009.
- 70) “Compact, High-speed and Power-efficient Electrooptic Plasmonic Modulators,” Wenshan Cai, Justin S. White, and Mark L. Brongersma, *Nano Letters Vol. 9*, 4403-4411 (2009).
- 69) “Optical Antenna Thermal Emitters,” Jon A. Schuller, Thomas Taubner, and Mark L. Brongersma, *Nature Photonics*, 3, 658-661 (2009).
- 68) “Near-infrared free-carrier absorption in silicon nanocrystals,” Rohan D. Kekatpure and Mark L. Brongersma, 34, 3397-3399, *Opt. Letters* (2009).
- 67) “Side-coupled cavity model for surface plasmon-polariton transmission across a groove,” John S. Q. Liu, Justin S. White, Shanhui Fan, and Mark L. Brongersma, *Optics Express* 17, 17837-17848 (2009).
- 66) “Nonradiative recombination in strongly interacting silicon nanocrystals embedded in amorphous silicon-oxide films”, Jeremy A. Rowlette, Rohan. D. Kekatpure, Matt. A. Panzer, Mark L. Brongersma, and Kenneth E. Goodson, *Phys. Rev. B*80, 045314 (2009).

- 65) "Engineering Light Absorption in Semiconductor Nanowire Devices," Linyou Cao, Justin S. White, Joon-Shik Park, Jon A. Schuller, Bruce M. Clemens, and Mark L. Brongersma, *Nature Mat.* 8, 643-647 (2009).
- 64) "Metal-dielectric-metal plasmonic waveguide devices for manipulating light at the nanoscale" Invited Paper, Georgios Veronis, Zongfu Yu, S.E. Kocabas, David A. B. Miller, Mark L. Brongersma, and Shanhui Fan, *Chinese Opt. Lett.* 7, (2009).
- 63) "Energy transfer in nanowire solar cells with photon-harvesting shells," C.H. Peters, A. R. Guichard, A. C. Hryciw, M. L. Brongersma, and M. D. McGehee, *J. Appl. Phys.* 105, 124509 (2009). This article as research highlight in July for *J. Appl. Phys.* and selected for the July 6th, 2009 issue of *Virtual Journal of Nanoscale Science & Technology*.
- 62) "Single crystalline and core-shell indium-catalyzed germanium nanowires - a systematic thermal CVD growth study," Ying Xiang, Linyou Cao, Sonia Conesa-Boj, Sonia Estrade, Jordi Arbiol, Francesca Peiro, Martin Hei, I Zardo, Joan R Morante, Mark L Brongersma, and Anna Fontcuberta i Morral, *Nanotechnology* 20, 245608 (2009)
- 61) "Design of Plasmonic Thin-Film Solar Cells with Broadband Absorption Enhancements," Ragip A. Pala, Justin White, Edward Barnard, John Liu, and Mark L. Brongersma, *Adv. Mater.* 21, 3504-3509 (2009).
- 60) "Synthesis parameter space of bismuth catalyzed germanium nanowires," Ying Xiang, Linyou Cao, Jordi Arbiol, Mark L. Brongersma, and Anna Fontcuberta i Morral, *Appl. Phys. Lett.* 94, 163101 (2009).
- 59) "Broadband enhancement of light emission in silicon slot waveguides," Young Chul Jun, Ryan M. Briggs, Harry A. Atwater, and Mark L. Brongersma, *Opt. Express* 17, 7479-7490, 17 (2009).
- 58) "Extraordinary optical absorption through subwavelength slits," Justin S. White, Georgios Veronis, Zongfu Yu, Edward S. Barnard, Anu Chandran, Shanhui Fan,; Mark L. Brongersma, *Opt. Lett.*, 686-688, 34 (2009).
- 57) "Planar Lenses Based on Nanoscale Slit Arrays in a Metallic Film," Lieven Verslegers, Peter B. Catrysse, Zongfu Yu, Justin S. White, Edward S. Barnard, Mark L. Brongersma, and Shanhui Fan, *Nano Lett.*, 235-238, 9 (2009).
- 56) "Active Plasmonics Ultrafast Developments," Linyou Cao and Mark L Brongersma, *Nature Photonics*, 12, 3 (2009).
- 55) "Plasmon-enhanced emission from optically-doped MOS light sources," Aaron Hryciw, Young Chul Jun, Mark L. Brongersma, *Opt. Express*, 17, 185-192 (2009).
- 54) "Temperature-dependent Auger recombination dynamics in luminescent Silicon nanowires," Alex R. Guichard, Rohan D. Kekatpure, Mark L. Brongersma, and Theodore I. Kamins, *Phys. Rev. B* 78, 235422 (2008).
- 53) "Quantification of Free-Carrier Absorption in Silicon Nanocrystals with an Optical Microcavity," R.D. Kekatpure and M.L. Brongersma, *Nano Lett.*, 8, 3787-3793, (2008).
- 52) "Non-Resonant Enhancement of Spontaneous Emission in Metal-Dielectric-Metal Plasmon Waveguide Structures," Young Chul Jun, Rohan D. Kekapture, Justin S. White, and Mark L. Brongersma, *Phys. Rev. B* 78, 153111 (2008).

- 51) "Spectral Properties of Plasmonic Resonator Antennas," Edward S. Barnard, Justin S. White, Anu Chandran, and Mark L. Brongersma, *Opt. Express*, 16, 16529-16537 (2008).
- 50) "Fundamental photophysics and optical loss processes in Si-nanocrystal doped microcavities," Rohan D. Kekatpure and Mark L. Brongersma, *Phys. Rev. A* 78, 023829 (2008).
- 49) "A Non-Volatile Plasmonic Switch Employing Photochromic Molecules," Ragip A. Pala, Ken T. Shimizu, Nick A. Melosh, and Mark L. Brongersma, *Nano Lett.* 8, 1506 (2008).
- 48) "Plasmonics – Engineering Optical Nanoantennas," Mark L. Brongersma, *Nature Photonics* 2, 270-272 (2008).
- 47) "Gain-induced switching in metal-dielectric-metal plasmonic waveguides," Zongfu Yu, Georgios Veronis, Shanhui Fan, and Mark L. Brongersma *Appl. Phys. Lett.* 92, 041117 (2008).
- 46) "Plasmon-Assisted Local Temperature Control to Pattern Individual Semiconductor Nanowires and Carbon Nanotubes," L. Cao, D.N. Barsic, A.R. Guichard, and M.L. Brongersma, *Nano Lett.*, 7, 3523-3527 (2007).
- 45) "Midinfrared Dielectric Metamaterials Based on Electric and Magnetic Mie Resonances of Silicon Carbide Particles," J.A. Schuller, T. Taubner, and Mark L. Brongersma, *Phys. Rev. Lett.* 99, 107401 (2007).
- 44) "Surface Plasmon-Polariton Analogue to Young's double Slit Experiment," Rashid Zia and Mark L. Brongersma, *Nature Nanotechnology*, 2, 426 - 429 (2007).
- 43) "Metal-dielectric slot waveguide structures for the propagation of surface plasmon polaritons at 1.55  $\mu\text{m}$ ," Ning-Ning Feng, Mark L. Brongersma, and Luca Dal Negro, *IEEE Journ. Of Quant. Electron.* 43, 479- 485 (2007).
- 42) "Omni-directional Light Emission via Surface Plasmon-Polaritons," John S.Q. Liu and Mark L. Brongersma, *Appl. Phys. Lett.* 90, 091116-1-3 (2007).
- 41) "Thin Film Patterning by Surface-Plasmon-Induced Thermocapillarity," Lars Röntzsch, Karl-Heinz Heinig, Jon A. Schuller and Mark L. Brongersma, *Appl. Phys. Lett.* 90, 044105-1-3 (2007).
- 40) "Plasmon-assisted chemical vapor deposition," D.A. Boyd, L. Greengard, Mark L. Brongersma, M.Y. El-Naggar, D.G. Goodwin, *Nanoletters* 6 2592-2597 (2006).
- 39) "Cavity  $Q$  Measurements of Silica Microspheres with Nanocluster Silicon Active Layer," Joo-Yeon Sung, Anuranjita Tewary, Mark L. Brongersma, and Jung H. Shin *IEEE Journal of Selected Topics in Quantum Electronics*, 12, 1388-1393 (2006).
- 38) "Silicon-Nanocrystal-Coated Silica Microsphere Thermo-optical Switch," Anuranjita Tewary, Michel J.F. Digonnet, Joo-Yeon Sung, Jung H. Shin, and Mark Brongersma, *IEEE Journal of Selected Topics in Quantum Electronics*, 12, 1476-1479 (2006).
- 37) "Probing Molecular Junctions Using Surface Plasmon Resonance Spectroscopy," Ken. T. Shimizu, Ragip A. Pala, Jason D. Fabbri, Mark L. Brongersma, and Nicholas A. Melosh, *Nanoletters* 6, 2797-2803 (2006).
- 36) "Plasmon," Mark L. Brongersma, Thomas L. Ferrell, and Pieter G. Kik, *AccessScience@McGraw-Hill*, <http://www.accessscience.com>, DOI 10.1036/1097-8542.526250 (2006).



- 35) "Design of Midinfrared Photodetectors Enhanced by Surface Plasmons on Grating Structures," Zongfu Yu, Georgios Veronis, Shanhui Fan, and Mark L. Brongersma, *Optics Letters*, 89, 151116-1-3 (2006).
- 34) "Near-Field Characterization of Guided Polariton Propagation and Cutoff in Surface Plasmon Waveguides," Rashid Zia, Jon A. Schuller, and Mark L. Brongersma, *Phys. Rev. B*, 74, 165415 (2006).
- 33) "Tunable Light Emission from Quantum-Confined Excitons in TiSi<sub>2</sub>-Catalyzed Silicon Nanowires," Alex R. Guichard, David N. Barsic, Shashank Sharma, Theodore I. Kamins, and Mark L. Brongersma, *Nanoletters*, 6, 2140 – 2144 (2006).
- 32) "Plasmonics: The Next Chip-Scale Technology," Rashid Zia, Jon A. Schuller and Mark L. Brongersma, *Materials Today* 9, 20-27 (2006).
- 31) "Controlling Defect and Si Nanoparticle Luminescence from Silicon Oxynitride Films with CO<sub>2</sub> Laser Annealing", Anuranjita Tewary, Rohan D. Kekatpure, and Mark L. Brongersma, *Appl. Phys. Lett.* 88, 093114 (2006). This article was also selected for the March 13, 2006 issue of *Virtual Journal of Nanoscale Science & Technology*. The *Virtual Journal*, which is published by the American Institute of Physics and the American Physical Society in cooperation with numerous other societies and publishers, is an edited compilation of links to articles from participating publishers, covering a focused area of frontier research.
- 30) "Erbium-implanted silica microsphere laser," J. Kalkman, A. Polman, T. Kippenberg, K. J. Vahala, and M. L. Brongersma, *Nucl. Instr. and Meth. B*, vol. 242 182–185 (2006).
- 29) "Design of Silicon Based Field-Effect Electro-Optic Modulator With Enhanced Light-Charge Interaction," Rohan D. Kekatpure and Mark L. Brongersma, *Opt. Lett.* 30, 2149-2151 (2005).
- 28) "Nanoengineered silicon/silicon dioxide nanoparticle heterostructures," Michele L. Ostraat, Mark L. Brongersma, H.A. Atwater, R.C. Flagan, *Solid State Sciences* 7, 882-890 (2005).
- 27) "Dielectric waveguide model for guided surface polaritons," R. Zia, A. Chandran, Mark L. Brongersma, *Opt. Lett.* 30, 1473-1475 (2005).
- 26) "Leaky and bound modes of plasmonic waveguides," Rashid Zia, Mark D. Selker, and Mark L. Brongersma, *Phys. Rev. B* 71, 165431, (2005).
- 25) "Geometries and Materials for Sub-wavelength Surface Plasmon Modes," Rashid Zia, Mark D. Selker, Peter B. Catrysse, and Mark L. Brongersma, *J. Opt. Soc. Am A* 21, 2442-2446 (2004).
- 24) "Omnidirectional Resonance in a Metal-Dielectric-Metal geometry," Hocheol Shin, R. Zia, M. F. Yanik, Shanhui Fan and M.L. Brongersma, *Appl. Phys. Lett.* 84, 4421-4423 (2004).
- 23) "Nanoshells: gifts in a gold wrapper," M.L. Brongersma, *Nature Materials*, 2, 296-297 (2003).
- 22) "Observation of near-field coupling in metal nanoparticle chains using far-field polarization spectroscopy", S.A. Maier, M.L. Brongersma, P.G. Kik, and H.A. Atwater, *Phys. Rev. B* 65, 193408 (2002).
- 21) "Electromagnetic energy transport along Yagi arrays," Stefan A. Maier, Mark L. Brongersma, Harry A. Atwater, *Mat. Sci. and Eng. C* 19 291–294 (2002).

- 20) "Plasmonics - A Route to Nanoscale Optical Devices," S.A. Maier, M.L. Brongersma, P.G. Kik, S. Meltzer, A.A.G. Requicha, and H.A. Atwater, *Adv. Mater.* 13, 1501 (2001).
- 19) "Models for quantitative charge imaging by atomic force microscopy," E.A. Boer, L.D. Bell, M.L. Brongersma, H.A. Atwater, *J. Appl. Phys.* 90, 2764 (2001).
- 18) "Synthesis and characterization of aerosol silicon nanocrystal nonvolatile floating-gate memory devices," M.L. Ostraat, J.W. De Blauwe, M.L. Green, L.D. Bell, M.L. Brongersma, J. Casperson, R.C. Flagan, H.A. Atwater, *Appl. Phys. Lett.* 79, 433 (2001).
- 17) "Manipulation and Charging of Single Si Nanocrystals by Atomic Force Microscopy," E.A. Boer, L.D. Bell, D.H. Santamore, M.L. Brongersma, and H.A. Atwater, *Appl. Phys. Lett.* 78, 3133 (2001).
- 16) "Localized Charge Injection in SiO<sub>2</sub> Films Containing Silicon Nanocrystals," E.A. Boer, M.L. Brongersma, L.D. Bell, and H.A. Atwater, *Appl. Phys. Lett.* 79, 791 (2001).
- 15) "Colloidal Assemblies Modified by Ion Irradiation," E. Snoeks, A. van Blaaderen, T. van Dillen, C.M. Kats, K. Velikov, M.L. Brongersma, and A. Polman, *Nucl. Instr. and Meth. B.* 178, 62 (2001).
- 14) "Electromagnetic Energy Transfer and Switching in Nanoparticle Chain-arrays Below the Diffraction Limit," M.L. Brongersma, J. Hartman, and H.A. Atwater, *Phys. Rev. B* 62, R16356, (2000).
- 13) "Electromagnetic Energy Transport Along Arrays of Closely Spaced Metal Rods as an Analogue to Plasmonic Devices," S.A. Maier, M.L. Brongersma, and H.A. Atwater, *Appl. Phys. Lett.* 78, 16 (2000).
- 12) "Monodisperse Silica and ZnS Particles with Continuously Variable Shape Made by Ion Irradiation of Micro-Spheres," E. Snoeks, A. van Blaaderen, T. van Dillen, C.M. Kats, K. Velikov, M.L. Brongersma, and A. Polman, *Advanced Materials* 12, 1511 (2000).
- 11) "Origin of MeV Ion Irradiation-Induced Stress Changes in SiO<sub>2</sub>," M.L. Brongersma, E. Snoeks, T. van Dillen, and A. Polman, *J. Appl. Phys.* 88, 59 (2000).
- 10) "Formation Mechanism of Silver Nanocrystals Made by Ion Irradiation of Na<sup>+</sup>↔Ag<sup>+</sup> Ion-Exchanged Sodalime Silicate Glass," D.P. Peters, C. Strohhofer, M.L. Brongersma, J. van der Elsken, and A. Polman. *Nucl. Instrum. Methods Phys. B* 168, 237 (2000).
- 9) "Strong Exciton-Erbium Coupling in Si Nanocrystal-Doped SiO<sub>2</sub>," P.G. Kik, M.L. Brongersma, and A. Polman, *Appl. Phys. Lett.* 76, 2325 (2000).
- 8) "Size-Dependent Electron-Hole Exchange Interaction in Si Nanocrystals," M.L. Brongersma, P.G. Kik, A. Polman, K.S. Min, and H.A. Atwater, *Appl. Phys.* 76, 351 (2000).
- 7) "Depth Distribution of Luminescent Si Nanocrystals in Si Implanted SiO<sub>2</sub> Films on Si," M.L. Brongersma and A. Polman, K.S. Min and H.A. Atwater, *J. Appl. Phys.* 86, 759 (1999).
- 6) "Activation Energy Spectra for Annealing of Ion Irradiation-induced Defects in Silica Glasses," T. van Dillen, M.L. Brongersma, E. Snoeks, and A. Polman, *Nucl. Instr. and Meth. B* 148, 221 (1999).

- 5) "Tuning the Emission Wavelength of Si Nanocrystals in SiO<sub>2</sub> by Oxidation," M.L. Brongersma and A. Polman, K.S. Min, E. Boer, T. Tambo, and H.A. Atwater, *Appl. Phys. Lett.* 72, 2577 (1998).
- 4) "Temperature Dependence of MeV Heavy Ion-Irradiation Induced Viscous Flow in SiO<sub>2</sub>," M.L. Brongersma, E. Snoeks, and A. Polman, *Appl. Phys. Lett.* 71, 1628 (1997).
- 3) "Defect-Related vs Excitonic Visible Emission from Ion Beam Synthesized Si Nanocrystals in SiO<sub>2</sub>," K.S. Min, K.V. Shcheglov, C.M. Yang, and H.A. Atwater, M.L. Brongersma and A. Polman, *Appl. Phys. Lett.* 69, 2033 (1996).
- 2) "The Role of Quantum-Confined Excitons vs Defects in the Visible Luminescence of SiO<sub>2</sub> Films Containing Ge Nanocrystals," K.S. Min, K.V. Shcheglov, C.M. Yang, H.A. Atwater, M.L. Brongersma, and A. Polman, *Appl. Phys. Lett.* 68, 2511 (1996).
- 1) "Ion Beam Synthesis of Planar Optoelectronic Devices," A. Polman, E. Snoeks, G.N. van den Hoven, M.L. Brongersma, R. Serna, J.H. Shin, P. Kik, and E. Radius, *Nucl. Instrum. and Meth. B* 106, 393 (1995).

### ***Contributions to Conference Proceedings***

---

- 29) "Rolling mask nanolithography: the pathway to large area and low cost nanofabrication," Boris Kobrin, Edward S. Barnard, Mark L. Brongersma, Moon Kyu Kwak, and L. Jay Guo, *Proc. SPIE* 8249, 82490O (2012).
- 28) "Plasmons and rust for solar energy conversion," I. Thomann, B. Pinaud, R. Pala, M. Seo, Z. Chen, T. Jaramillo, M. L. Brongersma, Conference on Lasers & Electro-Optics Europe & 12th European Quantum Electronics Conference CLEO EUROPE/EQEC Location, Munich, Germany (2011).
- 27) "Effect of illumination on thermionic emission from microfabricated silicon carbide structures," J.-H. Lee, I. Bargatin, J. Provine, F. Liu, M.-K. Seo, R. Maboudian, M. L. Brongersma, N.A. Melosh, Z.X. Shen, R.T Howe, 16th International Solid-State Sensors, Actuators and Microsystems, Beijing, China (2011).
- 26) "An Integrated Plasmonic Polarimeter," F. Afshinmanesh, J.S. White, Wenshan Cai, Mark L. Brongersma, CLEO 2011 - Laser Science to Photonic Applications, Baltimore, MD, USA (2011).
- 25) "Strained Germanium Membrane using Thin Film Stressor for High Efficiency Laser," Nam Donguk, A.M. Roy, K.C.Y. Huang, M.L. Brongersma, K.C. Saraswat, CLEO: 2011 - Laser Science to Photonic Applications, Baltimore, MD, USA (2011).
- 24) "Modification of the spontaneous emission rate of nitrogen-vacancy centers in diamond by coupling to plasmons," A. Faraon, Young Chul Jun, P.E. Barclay, K.-M.C. Fu, C.M. Santori, M.L. Brongersma, R.G. Beausoleil, *Advances in Photonics of Quantum Computing, Memory, and Communication IV*, San Francisco, CA, (2011).
- 23) "Silicon nanowire hybrid photovoltaics," E. C. Garnett, C. Peters, M. Brongersma, Y. Cui, M. D. McGehee, , *Photovoltaic Specialists Conference (PVSC), 2010 35th IEEE* , DOI:10.1109/PVSC.2010.5614661,000934 - 000938 (2010).

- 22) "Active plasmonic components employing extreme light concentration," Mark L. Brongersma, 487, 21st Annual Meeting of the IEEE Lasers and Electro-Optics Society (LEOS 2008).
- 21) "Gain-induced switching in metal-dielectric-metal plasmonic waveguides," Z. Yu, G. Veronis, M.L. Brongersma, and S. Fan, Integrated Optics: Devices, Materials, and Technologies XII, Proceedings of the SPIE, 68960L (2008).
- 20) "The dependence of poly-crystalline SiC mid-infrared optical properties on deposition conditions," J. Provine, C. Roper, J.A. Schuller, M.L. Brongersma, R.Maboudian, R.T. Howe, 2008 IEEE/LEOS International Conference on Optical MEMs and Nanophotonics," 182-3 (2008).
- 19) "Photophysics of Si nanostructures: ensembles and single particles," A.R. Guichard, R.D. Kekatpure, M.L. Brongersma, 2008 Conference on Lasers and Electro-Optics (CLEO), 2 pp.(2008).
- 18) "Free-carrier absorption in Si nanocrystals probed by microcavity photoluminescence," R.D. Kekatpure, A.R. Guichard, M.L. Brongersma, 2008 Conference on Lasers and Electro-Optics (CLEO), 2 pp. (2008).
- 16) "High Q/V microdisk resonators for observation of purcell effect in silicon nanocrystals," R.D. Kekatpure, A.R. Guichard, and M.L.Brongersma, 4th IEEE International Conference on Group IV Photonics, 264-6 (2007).
- 15) "Auger recombination in luminescent, CMOS-compatible Si nanowires," A.R. Guichard, R.D. Kekatpure, and M.L.Brongersma, 4th IEEE International Conference on Group IV Photonics, 264-6 (2007).
- 14) "Design of mid-infrared photodetectors enhanced by surface plasmons on grating structures," Z. Yu, G. Veronis, M.L. Brongersma, S. Fan, Integrated Optics: Devices, Materials, and Technologies XI, Proceedings of the SPIE, 64750Q-1-8 (2007).
- 13) "Light emitting silicon nanowires for photonic device applications," A.R. Guichard, M.L. Brongersma, T. Kamins,S. Sharma, 3rd IEEE International Conference on Group IV Photonics, 3pp. (2006).
- 12) "High-Q whispering gallery modes in wet etched silica microdisk resonators containing silicon nanocrystals," R.D. Kekatpure and M.L. Brongersma, 3rd IEEE International Conference on Group IV Photonics, 3pp. (2006).
- 11) "Synthesis and optimization of luminescent Si nanoparticles by CO2 laser annealing and Si nanocrystal light emission in microcavities," R.D. Kekatpure, A. Tewary, M.L. Brongersma, Optoelectronic Devices: Physics, Fabrication, and Application III, Proceedings of the SPIE, 636801-1-16 (2006).
- 10) "Silicon-nanocrystal-coated Silica Microsphere Thermo-optical Switch," Anuranjita Tewary, Michel J. F. Digonnet, and Mark. L. Brongersma, Joo-Yeon Sung and Jung H. Shin, Photonics West Conferences 2006.
- 9) "Synthesis and optimization of luminescent Si nanoparticles by CO2 laser annealing and Si nanocrystal light emission in microcavities," Rohan D. Kekatpure, Anuranjita Tewary, and Mark L. Brongersma, Proc. SPIE 6368, 636801 (2006).
- 8) "Sub-wavelength resonances in metal-dielectric-metal plasmonic structures," S. Fan, Shanhui, H. Shin, M.L. Brongersma, G. Veronis, J.T. Shen, P.B. Catrysse, Conference Proceedings - Lasers and Electro-Optics Society Annual Meeting-LEOS;

- 2005; v.2005, p.521-522, 18th Annual Meeting of the IEEE Lasers and Electro-Optics Society, LEOS 2005, Sydney, Australia (2005).
- 7) "Evidence for stimulated emission in silicon nanocrystal microspheres," H. Chen, I.Y. Sung, A. Tewary, M.L. Brongersma, J.H. Shin, P.M. Fauchet, 2nd IEEE International Conference on Group IV Photonics, p.99-101, 21-23 Sept. 2005, Antwerp, Belgium.
  - 6) "Microring and microdisk optical resonators using silicon nanocrystals and erbium prepared using silicon technology," D.S. Gardner, M.L. Brongersma, *Opt. Mat.* 27, 804-811 2005.
  - 5) "CMOS Compatible High-speed Electro-optical Modulator," R. D. Kekatpure and M. L. Brongersma, *Proc. SPIE Int. Soc. Opt. Eng.* **5926**, 59260G (2005), San Diego.
  - 4) Tailoring the Optical Properties of Si Nanocrystals; Materials Issues and Nanocrystal Laser Perspectives, M.L. Brongersma, K.S. Min, E. Boer, T. Tambo, A. Polman, and H.A. Atwater, *Mater. Res. Soc. Symp. Proc.* 486, 213 (1998).
  - 3) "On the Origin of Visible Luminescence from SiO<sub>2</sub> Films containing Ge Nanocrystals," K.S. Min, K.V. Shcheglov, C.M. Yang, R.P. Camata, H.A. Atwater, M.L. Brongersma, and A. Polman, *Mater. Res. Soc. Symp. Proc.* 405, 247 (1996).
  - 2) "Ion Beam Synthesis of Planar Optoelectronic Devices," A. Polman, E. Snoeks, G.N. van den Hoven, M.L. Brongersma, R. Serna, J.H. Shin, P. Kik, and E. Radius, *Nucl. Instrum. and Meth. B* 106, 393 (1995).
  - 1) "Ion Beam Synthesis of Luminescent Si and Ge Nanocrystals in a Silicon Dioxide Matrix," H.A. Atwater, K.V. Shcheglov, S.S. Wong, K.J. Vahala, R.C. Flagan, M.L. Brongersma, and A. Polman, *Mater. Res. Soc. Symp. Proc.* 321, 363 (1994).

### ***Books and Book Chapters*** ---

- 7) "Optical antennas for information technology and energy harvesting," Mark Brongersma, Invited book chapter in the book "Optical Antenna Theory, Design and Applications," Editors A. Alù, and N. Engheta, Cambridge University Press (2012).
- 6) "Applications: Nanophotonics and Plasmonics," E.L. Hu, M.L. Brongersma, A. Baca, Springer 2010, Chapter 9 of a WTEC (World Technology Evaluation Center) study on 'Nanotechnology Research Directions. As the National Nanotechnology Initiative entered into its next decade, WTEC carried out a study to assess the progress made and to anticipate future challenges and opportunities for research in nanotechnology.
- 5) "Nanoplasmonics: Components, Devices, and Circuits," Mark L. Brongersma, Jon A. Schuller, Justin White, Young Chul Jun, Sergey I. Bozhevolnyi, Thomas Søndergaard, and Rashid Zia; Invited book chapter in a book entitled: "Plasmonic Nanoguides and Circuits" by World Scientific and edited by Sergey I Bozhevolnyi (2009).
- 4) "Surface Plasmon Nanophotonics," Series: Springer Series in Optical Sciences , Vol. 131, Brongersma, Mark L.; Kik, Pieter G. (Eds.) 2007, VII, 271 p., ISBN: 978-1-4020-4349-9.

- 3) "Development and Near-field Characterization of Surface Plasmon Waveguides," J.-C. Weeber, A.-L Baudrion, M.U. González, A. Dereux, Rashid Zia, and Mark L. Brongersma, Book chapter in the book: "Surface Plasmon Nanophotonics," Series: Springer Series in Optical Sciences , Vol. 131, Brongersma, Mark L.; Kik, Pieter G. (Eds.) 2007, VII, 271 p., ISBN: 978-1-4020-4349-9.
- 2) "Surface Plasmon Nanophotonics," Pieter G. Kik and Mark L. Brongersma, Book chapter in the book: "Surface Plasmon Nanophotonics," Series: Springer Series in Optical Sciences , Vol. 131, Brongersma, Mark L.; Kik, Pieter G. (Eds.) 2007, VII, 271 p., ISBN: 978-1-4020-4349-9.
- 1) "Guiding Properties of Surface Plasmon-Polariton Waveguides," Rashid Zia and Mark Brongersma, Invited Book chapter in a book entitled: "Nanophotonics with Surface Plasmons" and part of a Elsevier Series on "Advances in Nano-Optics and Nano-Photonics". Editors: V. Shalaev and S. Kawata (2006).

### ***Editor for Conference Proceedings*** ---

- 3) Proceedings for the 2009 MRS Spring Meeting, Symposium entitled: "Materials for Nanophotonics—Plasmonics, Metamaterials, and Light Localization," San Francisco, April 2004. Editors: L. Dal Negro and M.L. Brongersma, Materials Research Society Symposium Proceedings (2009).
- 2) Proc. of the 11<sup>th</sup> International Conference on Ion Beam Modification of Materials, Amsterdam, Netherlands, August 31 - September 4, 1998. Editors: A. Vredenberg, A. Polman, P. Stolk, E. Snoeks, M.L. Brongersma, Nucl. Instrum. Methods Phys. B 148: (1-4), VII-VIII (1999).
- 1) Proceedings for the 2004 MRS Spring Meeting, Symposium entitled: "New Materials for Microphotonics," San Francisco, April 2004. Editors: J. Shin, M.L. Brongersma, C. Buchal, F. Priolo, Materials Research Society Symposium Proceedings, 817 (2004).

### ***Issued Patents*** ---

- 7) "Electrically pumped extrinsic semiconductor optical amplifier with slotwaveguide," Lionel C. Kimerling, Harry Atwater, Mark L. Brongersma, Luca Dal Negro, Thomas L. Koch, Philippe Fauchet, Michal Lipson, Jurgen Michel, Carlos Angulo Barrios, Patent No.: US 8,619,358 B2, Issued Dec 31, 2013.
- 6) "Silicon-nanocrystal-coated Microsphere Thermo-optical Switches" Michel Digonnet, Anuranjita Tewary, and Mark L Brongersma, Patent No. 8,184,932 Issued May 22, 2012.
- 5) "Electromagnetic Control of Chemical Catalysis," David A. Boyd; Mark Brongersma; Leslie Greengard Filed: 12/14/2004, US Patent 7,998,538, Issued: August 16, 2011.
- 4) "Deterministic Aperiodic Patterned Dielectric and Plasmonic Materials for Localized Electromagnetic Field Enhancement," Luca Dal Negro, Ashwin Gopinath, Ning-Ning Feng, Mark Luitzen Brongersma, US Patent 7,903,246 B2, Issued March 8, 2011.

- 3) "Method and system for forming a film of material using plasmon-assisted chemical reactions," David A. Boyd, Mark L. Brongersma, and Leslie Greengard, US Patent 7504136, Issued Mar 17, 2009
- 2) Behzad Imani and Mark L. Brongersma, "Dimension Measurement Approach for Metal-Material," U.S. Patent No. 7,088,449, issued August 8 (2006).
- 1) "Optoelectronic Device and Method Utilizing Nanometer-scale Particles," US Patent No. 6,441,945 B1, issued August 27 (2002).

## ***Professional Service*** ---

### *Symposium and Conference Organization*

- 10) Chair Gordon Conference on Plasmonics, 2014.
- 9) Vice Chair Gordon Conference on Plasmonics, 2012.
- 8) One of the 5 Meeting Chairs for the 2013 Materials Research Society Spring Meeting.
- 7) Co-organizer of the 2012 MRS Fall Meeting, Symposium entitled: "Excitons and Plasmon Resonances in Nanostructures III" Boston, December 2012.
- 6) Co-organizer of the 2009 MRS Spring Meeting, Symposium entitled: "Plasmonics, Light Localization, and Metamaterials," San Francisco, April 2009.
- 5) Co-organizer of the 2007 MRS Fall Meeting, Symposium entitled: "Excitons and Plasmon Resonances in Nanostructures - Fundamentals, synthesis, and applications," Boston, December 2007.
- 4) Co-organizer of the 2006 MRS Spring Meeting, Symposium entitled: "Silicon-Based Microphotonics," San Francisco, April 2006.
- 3) Co-organizer of the 2005 MRS Fall Meeting, Symposium entitled: "Plasmonics--Nanoscale Optics and Photonics Based on Metals," Boston, December 2005.
- 2) Co-organizer of the 2004 MRS Spring Meeting, Symposium entitled: "New Materials for Microphotonics," San Francisco, April 2004.
- 1) Co-organizer of the Eleventh International Conference on Ion Beam Modification of Materials," Amsterdam, The Netherlands, September 1998.

### *Program Committees and Advisory Boards for Conferences*

- 13) General Chair, "Optical Nanostructures and Advanced Materials for Photovoltaics," Optical Society of America Conference, Tucson, Nov 2013.
- 12) Program committee for Section on Light-Matter interactions at the nanoscale, CLEO Europe-IQEC, May 2013.
- 11) Program committee for Section on Nanophotonics, CLEO Pacific Rim, Kyoto, Japan 2013.
- 10) Program committee of the SPIE conference on Metamaterials: Fundamentals and Applications, San Diego, August 2013.
- 9) Program Committee of the Nanometa 2013 conference, Seefeld, Austria, January 2013.
- 8) International program Committee of the 12<sup>th</sup> Near-field Optics (NFO12) in San Sebastian, Spain, September 2012.

- 7) International Advisory Board of Symposium F "Smart & Adaptive Optics" of CIMTEC, Florence, Italy, 2012.
- 6) Program Committee for the Annual OSA meeting on Integrated Photonics Research, Silicon and NanoPhotonics (IPR), Toronto, Canada, June, 2011.
- 5) Program Chair for the Optical Nanostructures for Photovoltaics (PV) conference, Karlsruhe, Germany, June 2010
- 6) Program Committee for the Annual OSA meeting on Integrated Photonics Research, Silicon and NanoPhotonics (IPR), Monterey, June, 2010.
- 4) Program Committee Photonics for Solar Energy Systems (part of SPIE Photonics Europe), Brussels, Belgium, April, 2010.
- 3) Program Committee Surface Plasmon Photonics (SPP) 4, Amsterdam, The Netherlands, 2009.
- 2) Program Committee Nanometa-2009, Seefeld Austria, 2009.
- 1) Program Committee Near-Field Optics (NFO10) Conference, 2009

*Contributions to Academic Journals*

- 7) Editorial Board of the Journal Nano-Photonics, since launch in 2012
- 6) Editorial Advisory Board of the Journal Advanced Optical Materials, since its launch in 2012.
- 5) Guest Editor for a special *Plasmonics* issue for the journal *Nanotechnology*, 2011
- 4) Guest Editor for special *Green Photonics* issue for the Journal of Optics, 2011
- 3) Editorial Advisory Panel, for "Nature Communications", since 2010
- 2) Guest Editor for *Plasmonics and Metamaterials* issue for the Journal of the Optical Society of America, 2009.
- 1) Scientific Advisory Board for the journal "Metamaterials", since 2007.

*National workshops to identify future opportunities of nanophotonics*

- 6) "Nanotechnology Research Directions," A World Technology Evaluation Center (WTEC) study, Chicago, March 2010.
- 5) "Chipscale Plasmonics and Nanophotonics," DARPA Components from Metamaterials Workshop, Washington, May 2007
- 4) "Plasmonics – The Next Wave of Chipscale Technologies," NanoMaterials for Defense Applications Symposium, Organized by the US Defense Agencies, San Diego, April 2007.
- 3) "Plasmonics – A New Wave of Opportunities," Briefing of National Academies Committee on Nanophotonics Accessibility and Applicability, Washington DC, January 2007.
- 2) "Plasmonic functionality on Si chips," Silicon Nanoelectronics and Beyond III, Workshop organized by SRC and NSF, National Science Foundation, Arlington, Virginia, December 2005.
- 1) "The future of Plasmonics and Si microphotonics," DARPA Frontiers on Quantum Device Engineering Workshop, Los Angeles, January 2005.



### *Member of Committees*

- 3) Management Committee for the Geballe Laboratory for Advanced Materials (GLAM), since 2011.
- 2) 2013 Max Born Award Committee of the Optical Society of America.
- 1) 2012 Max Born Award Committee of the Optical Society of America.

### *Regular review of journal articles for the following journals*

- 17) Advanced Optical Materials
- 16) Advanced Materials
- 15) Optical Communications
- 14) IEEE Journal of Quantum Electronics,
- 13) Optics Letters
- 12) Optics Express
- 11) ACS Nano
- 10) Nanoletters
- 9) Physical Review B
- 8) Applied Physics Letters
- 7) Physical Review Letters
- 6) Nature Materials
- 5) Nature Photonics
- 4) Nature Physics
- 3) Nature Nanotechnology
- 2) Nature
- 1) Science

### ***Invited Tutorials and Short Courses*** ---

- 8) “Plasmonics,” Short course at the Conference on Lasers and Electro-optics CLEO US, San Jose, June 2014.
- 7) “Plasmonics,” Short course at the Conference on Lasers and Electro-optics CLEO US, San Jose, June 2013.
- 6) “Plasmonics,” Short course at the Conference on Lasers and Electro-optics CLEO US, San Jose, June 2012.
- 5) “Nanoplasmonics,” Short course at the Conference on Lasers and Electro-optics CLEO Europe, Munich, Germany, 2011.
- 4) “Nanoplasmonics,” Tutorial given at the open house of the center of optical technologies at Lehigh University, 2009.
- 3) “Plasmonics,” Short course at the Conference on Lasers and Electro-optics CLEO Europe, Munich, Germany, 2009.
- 2) “Nanoplasmonics,” tutorial at the Materials Research Society (MRS) Spring Meeting, San Francisco, 2008.
- 1) “Towards CMOS Compatible Plasmonics and Nanophotonics,” Tutorial at NanoCommerce/SEMI NanoForum, Chicago, 2005.

## ***Major, Plenary, and Keynote Presentations*** ---

- 15) “Device Applications of Metafilms and Metasurfaces,” META’14, the 5th International Conference on Metamaterials, Photonic Crystals and Plasmonics, Plenary Lecture, Singapore, May 2014.
- 14) “Plasmonic and Semiconductor Building Blocks,” Tutorial talk at the Conference on Lasers and Electro-optics CLEO US, San Jose, 2013.
- 13) “Geometric tuning of Plasmonic and Semiconductor Resonances in Nanophotonic devices,” Kenote presentation at Meta 13, Sharjah, Dubai March 2013.
- 12) “Electrically Driven Plasmonic Nanocircuits,” Breakthrough talk at Nano Meta 2013, Seefeld, Austria, January 2013.
- 11) “Plasmonic and Semiconductor Building Blocks for Hybrid Nanophotonic Devices,” Keynote presentation at the Conference on Electrical Transport, and Optical Properties of Inhomogeneous Media (ETOPIM 10), Marseille, France, September 2012.
- 10) “Antenna electrodes for optical sources and solar cells,” Keynote presentation at the SPIE Annual Meeting, San Diego, August 2012.
- 9) “Nanoscale Photon Management for Solar Energy Harvesting,” Invited Presentation at the Gordon Research Conference on Nanofabrication, University of New England, Biddeford, Maine, July 2012.
- 8) “Hybrid Semiconductor/Plasmonic Devices for Nanophotonics,” Keynote presentation at the SPIE Annual Meeting, San Diego, August 2011.
- 7) “Plasmonic, Semiconductor, and Dielectric Building Blocks for Nanophotonics”, Keynote presentation at the SPIE Annual Meeting, San Diego, August 2010.
- 6) “Recent Advances in Plasmonic Device Technologies,” Plenary presentation at the Annual Integrated Photonic Research (IPR) conference, Monterey, July 2010.
- 5) “Active Plasmonic Devices Employing Extreme Light Concentration,” Gordon Conference on Plasmonics, New Hampshire, June 2010.
- 4) “Plasmonics: A Focus on Light Concentration,” Keynote presentation at the SPIE Annual Meeting, San Diego, August 2009.
- 3) “Plasmonics: The Next Wave of Chipscale Technologies,” Electrical Transport, and Optical Properties of Inhomogeneous Media (ETOPIM) 9 conference, Crete, Greece, June 2009.
- 2) “Plasmonics Bridging the Gap Between Microphotonics and Nanoelectronics,” Keynote presentation at the International Conference on Computational & Experimental Engineering and Sciences (ICCES9) conference, Hawaii, March 2008.
- 1) “Towards CMOS Compatible Nanophotonics and Plasmonics,” Gordon Conference on Nanofabrication, July 2004.

## *Invited Presentations*

---

- 143) "EELS studies of active plasmonic devices," Electron Beam Spectroscopy for Nanophotonics (EBSN) Conference, Amsterdam, June 2014.
- 142) "Fano Resonance in an Individual Semiconductor Nanostructure," META'14, the 5th International Conference on Metamaterials, Photonic Crystals and Plasmonics, Singapore, May 2014.
- 141) "Device Applications of Metafilms and Metasurfaces," META'14, the 5th International Conference on Metamaterials, Photonic Crystals and Plasmonics, Plenary Lecture, Singapore, May 2014.
- 140) "Stanford, Startups, and Surface plasmons," Seminar at Konica Minolta, Tokyo, Japan. February 2014
- 139) "Resonant Semiconductor Nanostructures for Optoelectronic Devices," SPIE Photonics West, January 2014.
- 138) "Nanoscale Photon Management for Solar Energy Harvesting," Seminar Materials Science Department, University of Pennsylvania, January 2014.
- 138) "Device Applications of Metafilms and Metasurfaces," Physics of Quantum Electronics 2014, Snowbird, January 2014.
- 137) "Device Applications of Metafilms and Metasurfaces," Materials Research Society Fall Meeting, Boston, December 2013.
- 136) "Nanoscale Photon Management for Solar Energy Harvesting," Optical Society of America Student Chapter at Purdue, November 2013.
- 135) "Semiconductor and Metallic Building Blocks for Future Optoelectronic Devices," Strategic Materials Conference, San Jose, October 2013.
- 134) "Nanophotonics: The Art of Managing Photons at the Nanoscale," Materials Science Department, Northwestern University, September 2013.
- 133) "Device Applications of Metafilms and Metasurfaces," Photonics West, San Diego, August 2013.
- 132) "Nanophotonic Light Tapping Strategies for Thin Solar Cells," Photonics West, San Diego, August 2013.
- 131) "Passive and Active Tuning of Optically Resonant Nanostructures," Photonics West, San Diego, August 2013.
- 130) "Tailoring optical and quantum confinement to enhance the performance of PEC Devices," Energy Focus Research Center Principle Investigator Meeting, July 2013.
- 129) "Plasmonic and Semiconductor Building Blocks for Nanophotonic Devices," CLEO Tutorial Talk, San Francisco, June 2013.
- 128) "Geometric tuning of Plasmonic and Semiconductor Resonances in Nanophotonic devices," Kenote presentation, Sharjah, Dubai March 2013.
- 127) "Optically Magnetic Building Blocks for Photonic Devices," Meta 13 Conference, Sjarjah-Dubai, March 2013.
- 126) "Nanophotonics: The Art of Managing Photons at the Nanoscale," Seminar Materials Science Department, Cornell University, March 2013.
- 125) "Nanostructured Metals and Semiconductors for Enhanced Solar Energy Harvesting," Bay Area Photovoltaics Consortium Webinar, Stanford, California, February 2013.
- 124) "Electrically driven plasmonic nanocircuits," Photonics West, San Francisco,

- February 2013.
- 123) "Nanophotonics for Solar Energy Harvesting from Ultrathin Cells," Photonics West, San Francisco, February 2013.
  - 122) "Electrically Driven Plasmonic Nanocircuits," Breakthrough talk, Nano Meta 2013, Seefeld, Austria, January 2013.
  - 121) "Nanophotonics: The Art of Managing Photons at the Nanoscale," Distinguished Lecture Series, University of Southern California, Dec 2012.
  - 120) "Plasmonic and Semiconductor Building Blocks for Hybrid Nanophotonic Devices," Electrical Transport, and Optical Properties of Inhomogeneous Media (ETOPIM) 10 conference, Marseille, France, September 2012.
  - 119) "Metal and Semiconductor Building Blocks for Metadevices," Institute of Basic Science symposium, Jeju Island, South Korea, August 2012.
  - 118) "Antenna electrodes for optical sources and solar cells," Keynote presentation at the SPIE Annual Meeting, San Diego, August 2012.
  - 117) "Plasmonic and Semiconductor Building Blocks for Hybrid Nanophotonic Devices," SPIE Annual Meeting, San Diego, August 2012.
  - 116) "Nanostructured Metal and Semiconductor Films for Solar Cells," SPIE Annual Meeting, San Diego, August 2012.
  - 115) "Plasmonics Meets Semiconductor Nanophotonics," International Nano-Optoelectronics Workshop (iNOW), Berkeley, August 2012.
  - 114) "Device applications of plasmonic antenna-electrodes," Workshop on Nanophotonics organized by the North Atlantic Treaty Organization (NATO), Paris, France, May 2012.
  - 113) "Antenna Electrodes for Optical Sources and Solar Energy Harvesting," European Materials Research Society, Strassbourg, France, May 2012.
  - 112) "Plasmonic Sources, Modulators, and Detectors for Optical Interconnection," Materials Research Society Spring Meeting, San Francisco, April 2012.
  - 111) "Antenna Electrodes for Optical Sources and Solar Energy Harvesting," Materials Research Society Spring Meeting, San Francisco, April 2012.
  - 110) "Plasmonics for Optical Interconnection," Optical Fiber Conference, Los Angeles, March 2012
  - 109) "*Lange Lecture*: The art of managing photons at the nanoscale," Materials Science Department at the University of California at Santa Barbara, February 2012.
  - 108) "The Art of Nanophotonics," Chemistry Department Seminar at California Institute of Technology, January 2012.
  - 107) "Plasmonic and High Index Nanostructures for Efficient Photovoltaic Energy Harvesting," Materials Research Society Fall Meeting, Boston, December 2011.
  - 106) "Nanophotonics for Solar Energy Harvesting," Renewable Energy Congress of the Optical Society of America, Austin Texas, November 2011.
  - 105) "Plasmonic Devices and Nanocircuits," ISAP Conference, Jeju Island, South Korea, October 2011.
  - 104) "Plasmonic and High Index Nanostructures for Efficient Solar Energy Conversion," Frontiers in Optics Conference, San Jose, October 2011.
  - 103) "Integrated nanophotonic devices based on metals and high-index dielectrics ," Intel, Oregon, October, 2011.

- 102) "Chipscale Nanophotonic Devices for Optical Interconnection," Webinar for the Interconnect Focus Center, September 2011.
- 101) "Hybrid Semiconductor/Plasmonic Devices for Nanophotonics," Keynote presentation at the SPIE Annual Meeting, San Diego, August 2011.
- 100) "Chipscale Nanophotonic Devices and Circuits," Technical University of Aachen, Germany, June 2011.
- 90) "Plasmonics and high-index nanophotonics," FOM-Institute AMOLF, Amsterdam, The Netherlands, June 2011.
- 89) "Nanophotonics: The Art of Managing Photons at the Nanoscale," Korea Advanced Institute of Technology, Daejeon, South Korea, May 2011.
- 88) "Ultra-low Power Hybrid Nanophotonic and Plasmonic Circuits," Surface Plasmon Polariton 5 (SPP5) Meeting, Busan South Korea, May 2011.
- 87) "Nanophotonics: The Art of Managing Photons at the Nanoscale," IBM Almaden Weekly Seminar, April 2011.
- 86) "Nanophotonics: The Art of Managing Photons at the Nanoscale," Physics Colloquium, Arizona State University, February 2011.
- 85) "Plasmonic, Semiconductor, and Dielectric Building Blocks for Nanophotonics", Photonics West, San Francisco, January 2011.
- 84) "Plasmonic and Semiconductor Building Blocks for Nanophotonics", NanoMeta, Seefeld, Austria, January 2011.
- 83) "A Comparison of Plasmonic and Semiconductor Optical Antennas," Materials Research Society Meeting (MRS) Fall Meeting, December 2010.
- 82) "Nanophotonics-Past, Present, and Future Directions," Applied Physics Colloquium, Stanford University, November 2010.
- 81) "Nanophotonics: The Art of Managing Photons at the Nanoscale," Materials Science Colloquium, Stanford University, October 2010.
- 80) "Nanoscale Photon Management for Efficient Photovoltaic Energy Harvesting," Frontiers in Optics (FiO) conference, Rochester, October 2010
- 79) "Active Plasmonic Devices Employing Extreme Light Concentration," SPIE Annual Meeting, San Diego, August 2010.
- 78) "Plasmonic, Semiconductor, and Dielectric Building Blocks for Nanophotonics", Keynote presentation at the SPIE Annual Meeting, San Diego, August 2010.
- 77) "Recent Advances in Plasmonic Device Technologies," Plenary presentation at the Annual Integrated Photonic Research (IPR) conference, Monterey, July 2010.
- 76) "Active Plasmonic Devices Employing Extreme Light Concentration," Gordon Conference, New Hampshire, June 2010.
- 75) "Plasmonic Nanophotonics," Hebrew University, Jerusalem, Israel, April 2010.
- 74) "Active Plasmonic Devices Employing Extreme Light Concentration," Acceptance of Sackler Prize for the Physical Sciences, Tel Aviv University, April 2010.
- 73) "Plasmonic Devices Employing Extreme Light Concentration," PhoNa workshop on Photonic Nanostructures in Jena, Germany, February 2010.
- 72) "Plasmonics: Manipulating Light at the Nanoscale with Metals," Physics Colloquium at DTU, Copenhagen, Denmark, February 2010.
- 71) "Si Photonics Meets Plasmonics," Materials Science Colloquium at MIT, Boston, February 2010.

- 70) "Dielectric Building Blocks for Metamaterials and Active Nanophotonics," Materials Research Society (MRS) Fall Meeting, Boston, December 2009.
- 69) "Chipscale Devices Employing Extreme Light Concentration," Canadian Institute for Advanced Research (CIFAR), Nanoelectronics and Photonics Conference, Quebec City, Canada, November 2009.
- 68) "Plasmonic Photovoltaics," Global Climate and Energy Project (GCEP) annual meeting, Stanford University, October 2009.
- 67) "Group IV Photonics Meets Plasmonics," Center for Integrated Nanotechnologies Annual Users Meeting at Sandia, September 2009.
- 66) "Group IV Photonics Meets Plasmonics," Group IV Photonics (GFP) conference, San Francisco, September 2009.
- 65) "Plasmonic Cavities for Light Generation and Detection," SPIE Annual Meeting, San Diego, August 2009.
- 64) "Thin Film Plasmonic Photovoltaics," SPIE Annual Meeting, San Diego, August 2009.
- 63) "En Route to Si-based Nanophotonics and Plasmonics," Materials Research Society Spring Meeting, April 2009.
- 62) "Plasmonic Photovoltaics," Stanford Photonics Research Center, Stanford University, March 2009.
- 61) "Plasmonics: The Next Wave of Chipscale Technologies," UC Berkeley, January 2009.
- 60) "Plasmonic Cavities for Light Generation and Detection," NanoMeta, Seefeld, Austria 2009.
- 59) "Wavelength dependence of free-carrier absorption in Si nanocrystals measured by microcavity photoluminescence," Photonics West, San Jose CA, January 2009.
- 58) "Dielectric vs. Plasmonic Cavities for Si Nanostructures," Photonics West, San Jose CA, January 2009.
- 57) "En Route to Si-based Nanophotonics and Plasmonics," Future of Light Symposium, Boston University, December 2009.
- 56) "Active Plasmonic Components Employing Extreme Light Concentration," LEOS Annual Meeting, Newport Beach, Nov 2008.
- 55) "2008 Solar Energy: New Materials and Nanostructured Devices for High Efficiency," OSA Topical Meeting, Stanford University, June 2008.
- 54) "Recent Progress in Plasmonics," CLEO, San Jose, May 2008.
- 53) "Plasmonics - Catalyzing a Revolution in Chip Technology," Photonics West, San Jose, January 2008.
- 52) "Plasmonics - The Next Wave of Chipscale Technologies !?," Fall Materials Research Society (MRS) Meeting, Boston, November 2007.
- 51) "Plasmonics - The Missing Link for Chipscale Technologies," IEEE LEOS Workshop on Plasmonics, MIT-Lincoln Lab, October 2007.
- 50) "Surface Plasmon-Polariton Transport, Localization and Detection," Frontiers in Optics (FiO) conference, San Jose, September 2007.
- 49) "Plasmonics- Catalyzing The Next Wave of Chipscale Technologies," SPIE Annual Meeting, San Diego, August 2007.
- 48) "Plasmonics - Catalyzing a Revolution in Chip Technology," Third International Conference on Surface Plasmon Photonics, Dyon, France, June 2007.

- 47) "Chipscale Plasmonics and Nanophotonics," Components from Metamaterials Workshop, Washington, May 2007.
- 46) "Chipscale Plasmonics and Nanophotonics," DARPA/MTO Components from Metamaterials Workshop, May 2-3, 2007.
- 45) "Plasmonics – The Next Wave of Chipscale Technologies," NanoMaterials for Defense Applications Symposium, San Diego, April 2007.
- 44) "Plasmonics – The Missing Link between Nanoelectronics and Microphotonics," Progress in Electromagnetics Research Symposium (PIERS2007)," Beijing, China March 2007.
- 43) "Plasmonics – A New Wave of Opportunities," Briefing of National Academies Committee on Nanophotonics Accessibility and Applicability, January 2007.
- 42) "Plasmonics – The Missing Link between Nanoelectronics and Microphotonics," Nanometa Conference, Seefeld Austria, January 2007.
- 41) "Plasmonics – The Missing Link between Nanoelectronics and Microphotonics," International Workshop on Plasmonics and Applications for Nanotechnologies," Singapore, December 2006.
- 40) "Surface Plasmon Generation, Waveguiding, and Detection," Berkeley, October 2006.
- 39) "Plasmonics – The New Wave of Chipscale Technologies!?" San Jose State, October 2006.
- 38) "Plasmonics: The missing link between nano-electronics and microphotonics," Optics East, Boston, October 2006.
- 37) "Nanostructured Metal-Organic Composite Solar Cells," Global Climate and Energy Project Conference, Stanford University, Stanford, August 2006.
- 36) "Guiding, Diffraction, Concentration, and Modulation of Surface Plasmon-Polaritons," Complex Photonic Media Conference, San Diego, August 2006.
- 35) "Surface Plasmon-Polariton Guiding, Diffraction, Concentration, and Modulation," Nanophotonics Topical Meeting (NANO) of the Optical Society of America Uncasville, Connecticut, April 2006.
- 34) "Hybrid Metal/Organic Devices –Towards Plasmolecular Electronics and Photonics," Spring MRS, San Francisco, 2006.
- 33) "Plasmonic Interconnection for Short Range Information Transport," Korean Conference on Semiconductors, Cheju Island, South Korea, 2006
- 32) "Plasmonic functionality on Si chips," Silicon Nanoelectronics and Beyond III, Workshop organized by SRC and NSF, National Science Foundation, Arlington, Virginia, 2005.
- 31) "Plasmonic Nanocircuits for Information Processing and Transport," University of Michigan, October 2005.
- 30) "Towards CMOS Compatible Plasmonics and Nanophotonics," Hewlet Packard, September 2005.
- 29) "Light Emitting Devices Based on Si Nanostructures," Kobe University, July 2005.
- 28) "Photon Scanning Tunneling Microscopy for Study of Plasmonic Devices," Osaka University, July 2005.
- 27) "Si-based microphotonics and Plasmonics," Nagoya Institute of Technology, July 2005.

- 26) "Passive and Active Plasmonics and Nanophotonics," Laser Physics Conference, Kyoto, July 2005.
- 25) "Passive and Active Plasmolecular Electronics and Photonics," SPP2 conference on Surface Plasmon Photonics, Graz, Austria, May 2005.
- 24) "Chipscale Nanophotonics and Plasmonics," UC Davis, Davis, May 2005.
- 23) "Future Applications of Plasmonic Waveguides and Devices," Nanotech Summit, Stanford, April 2005.
- 22) "Towards CMOS Compatible Microphotonics," Materials Research Society Spring Meeting, San Francisco, April 2005.
- 21) "Towards CMOS Compatible Microphotonics," Optical Fiber Conference, Anaheim, California, March 2005.
- 20) "The future of Plasmonics and Si microphotonics," DARPA Frontiers on Quantum Device Engineering Workshop, Los Angeles, Jan 2005.
- 19) "Towards CMOS Compatible Nanophotonics and Plasmonics," Photonics and Quantum Electronics (PQE) Conference, Snowbird, Utah, Dec. 2004.
- 18) "Towards CMOS Compatible Nanophotonics and Plasmonics," International Symposium on Nanomanufacturing (ISNM), Kaist, Korea, Nov. 2004
- 17) "Towards CMOS Compatible Nanophotonics and Plasmonics," Seoul National University, Seoul, Korea, November 2004.
- 16) "Towards CMOS Compatible Nanophotonics and Plasmonics," Energy and Telecommunications Research Institute, Korea, November 2004.
- 15) "Towards CMOS Compatible Nanophotonics and Plasmonics," UCSB, Santa Barbara, October 2004.
- 14) "Towards CMOS Compatible Nanophotonics and Plasmonics," Gordon Conference on Nanofabrication, July 2004.
- 13) "Towards CMOS Compatible Nanophotonics," European Spring Materials Research Society Meeting," May 26th 2004, Strassbourg, France.
- 12) "Plasmonics – Building Nanoscale Photonic Functionality with Metals," Purdue University, April 1st 2004.
- 11) "Plasmonics – Building Nanoscale Photonic Functionality with Metals," Lockheed Martin, March 25th, 2004.
- 10) "Study of Light Propagation in Metal Nanostructures using NSOM," Harvard University, December 5th, 2003.
- 9) "Biosensing Using Ultra-high Q Optical Microcavities," Litton/Northrop, October 28th, 2003.
- 8) "Plasmonics: A Route to Nanoscale Photonic Functionality," American Physical Society meeting, March 2003.
- 7) "Plasmonics - A route to nanoscale photonic functionality," Stanford Photonics Research Conference, September 16, 2002.
- 6) "Photonic Functionality below the diffraction limit using Metals," "Matter that Matters" event at Stanford, August 1, 2002.
- 5) "Bridging the Gap between Macro-and Nanophotonics," Xerox PARC, March 1, 2002.



- 4) "The Limits and Advantages of Using Ion Implantation for the Fabrication of Plasmonic Devices," Fall Meeting Materials Research Society; Boston, MA; December 2000.
- 3) "Electrical and Optical Properties of Ion Beam Synthesized Si Nanocrystals," Gordon Research Conference on Materials Processes Far from Equilibrium; Plymouth, NH; July 1999.
- 2) "New Light on the Optical and Electrical Properties of Si Nanocrystals," Spring Meeting European Materials Research Society; Strassbourg, France; June 1999.
- 1) "The Physics of Group IV Nanocrystals," Enrico Fermi Summer School; Varenna, Italy; July 1998.